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Three new species of *Monodictys* from soil

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Abstract — Three new species of *Monodictys* from soil in Tibet, China — *M. tuberculata, M. clavata* and *M.* shigatse*nsis* — are described and illustrated. The type specimens (dried cultures) and living cultures are deposited in the Herbarium of Shandong Agricultural University Plant Pathology (HSAUP). The isotypes are kept in Herbarium of Institute of Microbiology, Academia Sinica (HMAS).

Key words — taxonomy, soil fungi, dematiaceous hyphomycetes

Introduction

Since the genus *Monodictys* S. Hughes was erected in 1958, more than 50 species have been recognized worldwide (indexfungorum.org/Names/Names_asp). In China 16 species have been recorded (Zhao & Zhang 2004, 2007; Liu & Zhang 2007). The conidium morphology (solitary, dictyospores, frequently subglobose, pyriform or clavate, often constricted at the septa, verrucose or smooth) can often be used to diagnose the genus. In the course of a survey of soil dematiaceous hyphomycetes in Tibet, three new species were found that match *Monodictys* morphologically but differ from all described species in the genus. They are described below.

Taxonomic descriptions

Monodictys tuberculata Y.M. Wu & T.Y. Zhang, **sp. nov**. Figure 1

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Coloniae in PCA effusae, pallide brunneae. Mycelium partim superficiale et partim immersum. Hyphis hyalinis vel pallide brunneis, levibus vel verrucosis, 1–2 µm crassis compositum. Conidiophora micronematosa, pallide brunnea, tuberculata, 8–50 µm longa, 4–8 µm crassa Cellulae conidiogenae monoblasticae, determinatae, terminales, aliquando inflatae, 5–8 µm longae et 4–8 µm latae, hyalinae vel pallide brunneae. Conidia singularia,

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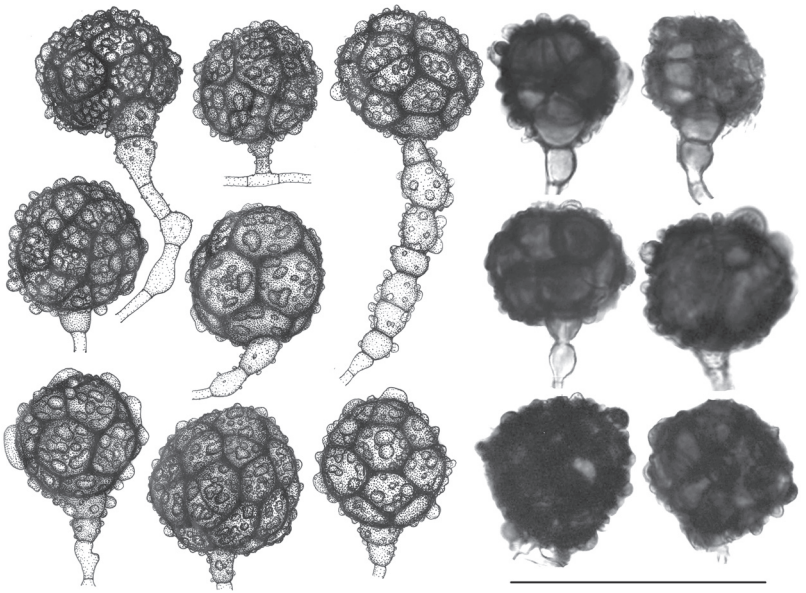

Fig. 1 Conidia and conidiogenous cells of *Monodictys tuberculata* (ex holotype; bar = 50 μm). Left: drawings; right: photomicrographs

tuberculata, subglobosa, ex cellulis globosis numerosis crasse tunicatis composita, brunnea vel atrobrunnea, 20–32 μm diam.

Holotype: isolated from grassland soil in Sannan, Tibet, China, altitude 3100 m, 14 Jun. 2007, Y.M. Wu, HSAUPII$_{07}$ 0834, **holotype** (HMAS 196213, isotype).

Etymology: in reference to the tuberculate conidia.

Colonies effuse, pale brown to moderately brown, 50–60 mm diameter on PCA (potato carrot agar) at 25°C in 2 weeks. Mycelium partly superficial, partly immersed. Hyphae subhyaline to pale brown, smooth or verrucose, septate, 1–2 μm thick. Conidiophores solitary, tuberculate, straight or flexuous, pale brown, 8–50 μm long, 4–8 μm thick. Conidiogenous cells monoblastic, determinate, hyaline or pale brown, sometimes inflated, 5–8 μm long, 4–8 μm thick. Conidia solitary, terminal, globose to subglobose, tuberculate, brown to dark brown, often constricted at septa, 20–32 μm in diameter.

This species is somewhat similar to *Monodictys fluctuata* (Tandon & Bilgrami) M.B. Ellis (Ellis 1971) and *M. putredinis* (Wallr.) S. Hughes (Hughes 1958) in conidium morphology and size. The main distinction among these three taxa is that the conidium surface is obviously tuberculate in *M. tuberculata*, smooth in *M. putredinis,* and verruculose (with a larger, up to 40 μm, conidium) in *M. fluctuata*.

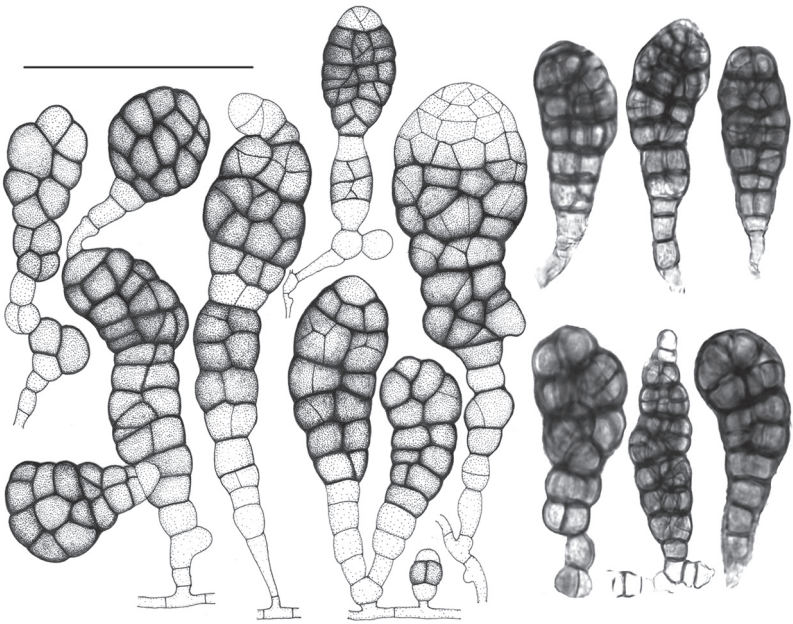

Fig. 2 Conidia and conidiogenous cells of *Monodictys clavata* (ex holotype; bar = 50 µm). Left: drawings; right: photomicrographs

Monodictys clavata Y.M. Wu & T.Y. Zhang, **sp. nov.** Figure 2

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Coloniae in PCA effusae, brunneae. Mycelium partim superficiale et partim immersum, ex hyphis septatis, subhyalinis vel pallide brunnis, 1–2 µm crassis. Conidiophora singularia, laevia, recta vel curvata, pallide brunnea, 5–15 µm longa, 3–5 µm crassa. Cellulae conidiogenae 5–10 µm longae, 4–7 µm latae, hyalinae vel pallide brunneae. Conidia singularia, laevia, clavata vel pyriformia, plerumque constricta ad septa, pallide brunnea vel brunnea, 30–65 × 12.5–32 µm.

Holotype: from grassland soil in Sannan, Tibet, China, altitude 3300 m, 11 Jun. 2007, Y.M. Wu, HSAUPII$_{07}$ 0659, **holotype** (HMAS 196214, isotype).

Etymology: in reference to the clavate or pyriform conidia.

Colonies effuse, brown, 50–60 mm diameter on PCA at 25°C in 2 weeks. Mycelium partly superficial, partly immersed. Hyphae subhyaline to pale brown, 1–2 µm thick. Conidiophores solitary, smooth, straight or flexuous, pale brown, 5–15 µm long, 3–5 µm thick. Conidiogenous cells monoblastic, determinate, hyaline or pale brown, sometimes inflated, 5–10 µm long, 4–7 µm thick. Conidia frequently solitary, smooth, clavate or pyriform, pale brown to brown, often constricted at the septa, 30–65 × 12.5–32 µm.

This fungus somewhat resembles *Monodictys lepraria* (Berk.) M.B. Ellis (Ellis 1976) and *M. paradoxa* (Corda) S. Hughes (Hughes 1958) in conidium morphology. However, *M. paradoxa* conidia are mainly oval and shorter (20–43 × 17–30 μm), and *M. lepraria* conidia are larger (up to 100 × 50 μm) than those in *M. clavata.*

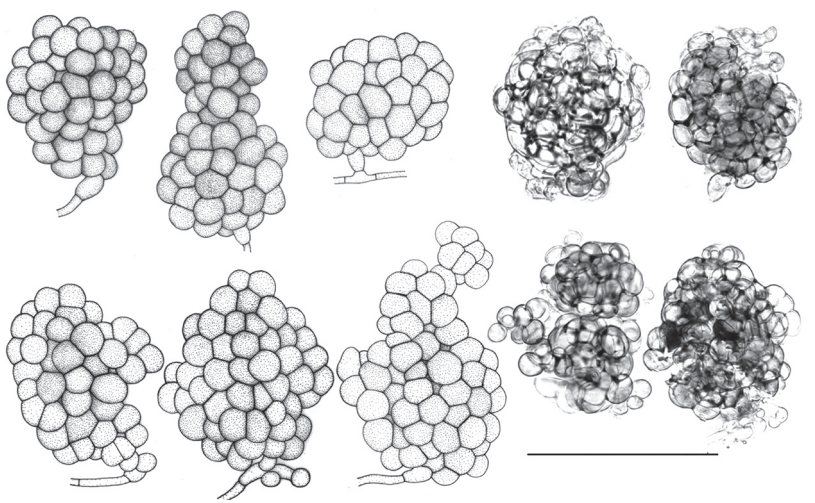

Fig. 3 Conidia and conidiogenous cells of *Monodictys* shigatse*nsis* (ex holotype; bar = 50 μm). Left: drawings; right: photomicrographs

Monodictys shigatsensis Y.M. Wu & T.Y. Zhang, **sp. nov.** Figure 3

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Coloniae in PCA vel effusae, pallide brunnea. Mycelium partim superficiale et partim immersum, ex hyphis subhyalinis vel pallide brunnis, 1–2 μm crassis. Conidiophora singularia, laevia, recta vel curvata, pallide brunnea, 5–15 μm longa, 3–5 μm crassa. Cellulae conidiogenae 5–10 μm longae et 2–4 μm latae, hyalinae vel pallide brunneae. Conidia singularia, laevia, obovoidea, pyriformia vel irregulariter muriformia, pallide brunnea, plerumque constricta ad septa, 40–65 × 30–45 μm.

Holotype: from grassland soil in Shigatse, Tibet, China, altitude 3000 m, 9 Sep. 2007, Y.M. Wu, HSAUPII$_{07}$ 0889, **holotype** (HMAS 196215, isotype).

Etymology: in reference to the type location.

Colonies effuse, pale brown, 50–60 mm diameter on PCA at 25°C in 2 weeks. Mycelium partly superficial, partly immersed. Hyphae subhyaline to pale brown, 1–2 μm thick. Conidiophores solitary, smooth, straight or flexuous, pale brown, 5–15 μm long, 3–5 μm thick. Conidiogenous cells 5–10 μm long, 2–4 μm thick, hyaline or pale brown. Conidia solitary, smooth, obovoid, pyriform or irregularly muriform, pale brown, often constricted at the septa, 40–65 × 30–45 μm.

The most closely related species in conidium morphology are *Monodictys chlamydosporoidea* H.M. Liu & T.Y. Zhang (Liu & Zhang 2007) and *M. gemmipara* Vasant Rao & de Hoog (Rao & Hoog 1995). However, the conidia of *M. chlamydosporoidea* are smaller (23–44 × 17–30 μm) and composed of fewer cells. *M. gemmipara* differs in dark reddish brown, larger (50–70 × 45–50 μm) conidia.

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